NC SCIFEST
PRESENTED BY BIOGEN FOUNDATION

DUKE ENERGY SCIENCE NIGHT

Marshmallow Towers

Big idea

Explore an engineering concept by using simple building materials to investigate which shapes are the strongest.

You will need

WHAT WE GAVE YOU:

- mini marshmallows
- toothpicks
- Kelvin the Robot stuffed toy
- Marshmallow Challenges instruction sheet
- Marshmallow Shapes instruction sheet

Fun options

AHEAD OF TIME

You can also buy small gumdrops (like Dots) or colored toothpicks to make the towers more colorful.

Set it up

Set out the mini marshmallows and toothpicks on your table or floor space. Set out Marshmallow Challenges and Marshmallow Shapes instruction sheets. Put the Kelvin the Robot stuffed toy in a safe place until some structures have been built.

It's showtime!

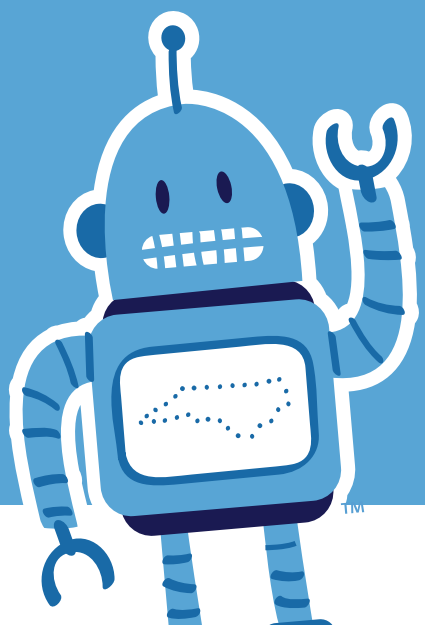
Encourage families to build structures using marshmallows to connect toothpicks. Once they have built on their own for a while, you can point out the shape diagrams and suggest that they build triangles and squares and see where that takes them. Suggest that families add on to a communal effort to build a really giant tower. Kelvin the Robot will be the test for stability. Challenge families to see if they can build something that supports Kelvin's weight.

If they love It...

Encourage families to check out the challenges and try to build:

- the tallest tower
- the tower with the narrowest base
- a bridge
- a structure that adds onto someone else's building
- a building with a hole big enough for your arm to fit through

Continued ›



SCIENCE FOR ALL • CIENCIA PARA TODOS •

DUKE ENERGY SCIENCE NIGHT

Marshmallow Towers

Why is this science?

This is **engineering**! Comparing the stability and weight-bearing ability of different shapes is what engineers do. A triangle is the most stable shape that can be made with straight lines, because when pressure is added to one point, the corners (or vertices) stay at the same angle and the triangle doesn't change shape. In contrast, pressure added to one corner (vertex) of a square will squish the square, changing its shape. This means that squares aren't as good for building strong supports. It is easy to see triangles in structures such as power-line pylons, radio towers and some bridges.

North Carolina connection

The second-tallest building in North Carolina is shaped like a triangle! The Duke Energy Center is a 786-foot tall, 48-floor skyscraper in Charlotte, NC. When it was completed in 2010, it was the largest building in Charlotte (in square footage), second tallest building in Charlotte, and 63rd tallest building in the United States. The building is named for its anchor tenant, Duke Energy. If that name sounds familiar it is because they are the sponsor of the Science Nights that are part of the NC Science Festival! The outside of the building is lit by hundreds of programmable color changing LED lights that provide various shows and effects. For example, if the Carolina Panthers are playing it may light up blue.

N&C SCIFEST

PROUDLY PRODUCED BY

MOREHEAD PLANETARIUM+ SCIENCE CENTER

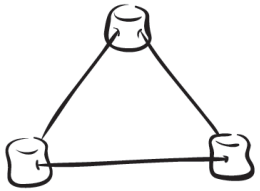
DUKE ENERGY SCIENCE NIGHT

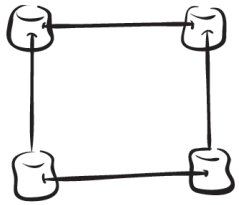
Marshmallow Towers

Marshmallow Challenges:

Try to build-

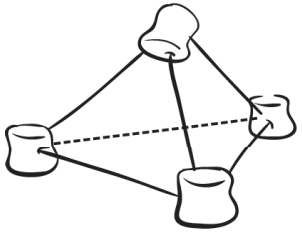
- a tower taller than you
- a tower with a narrow base
- a bridge
- a new wing on someone else's building
- a building with a hole big enough for your arm to fit through



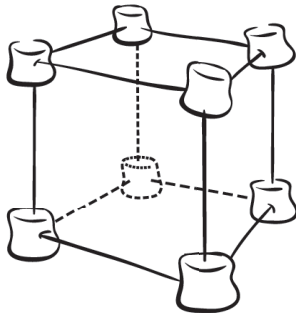


What to do

1. Make triangles and squares.
2. Then try putting them together.



4 triangles



6 squares

Can you make a shape out of 1 square and 4 triangles?